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QC ABSTRACT

Nameof Work:Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.

Sl. No.	Item	Quantity As Per BOQ	Required No's of testes	Actual No's of testes	Testes	Frequency
1	Slab (100mm)	57.51 Sqm	1	1	Concrete Core Compressive Strength	-
2	WMM	258.20Cum	-	-	-	-
		Gradation	2	2	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Atterberg Limits	2	2	-	-
3	DBM	86.07 Cum	-	-	-	-
		Quality of Binder	1	1	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Gradation	1	1	-	-
		Specific Gravity	1	1	-	-
		Stability of Mix	1	1	-	-
		Bitumen content	1	1	-	-
4	BC	232.74Cum	-	-	-	-
		Quality of Binder	1	1	-	-
		AIV	1	1	-	-
		Shape Test	1	1	-	-
		Gradation	1	1	-	-
		Specific Gravity	1	1	-	-
		Stability of Mix	2	2	-	-
		Bitumen content	2	2	-	-

Cubes
0-5 Cum 1Set
6-15 Cum 2Set
16-30 Cum 3Set
31-50 Cum 4Set
Add 1set for extra 50Cum

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ಬಾಗಲಗುಂಟೆ. ಜಿ.ಕೆ.ಎಂ.ಪಿ
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Job No.: CACE/BBMP/DV/W.No.15/2022-23

Date: 02.07.2022

PRECAST SLAB 100mm Thick(CORE) TEST REPORT

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Contractor : **Sri. D V Kumar, Contractor, Bangalore.**

Name of Work : Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.

No.of Sample Tested : 03

Date of Testing : 02.07.2022

Techinical Reference : IS:516-1959 (Reaffirmed 1999), SP-24:1983.

Grade of Concrete : M_{20}

Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	50.00	82.00	0.372	2310.46	1.64	0.961	31.90	16.25	17.55	16.86	21.08
2	50.00	84.00	0.389	2358.52	1.68	0.965	32.50	16.55	17.88	17.26	21.57
3	50.00	86.00	0.405	2398.43	1.72	0.970	33.60	17.11	18.48	17.92	22.40

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Job No.: CACE/BBMP/DV/W.No.15/2022-23

Date : 06.07.2022

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Sri. D V Kumar,** Contractor, Bangalore.

Name of Work : Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985

Date of Testing : 04.07.2022 to 06.07.2022

Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	20.00	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date : 06.07.2022

ATTERBERG LIMITS TEST FOR WMM

Client : **Assistant Executive Engineer,** Hegganahalli Sub Division, BBMP, Bangalore.
Agency : **Sri. D V Kumar,** Contractor, Bangalore.
Name of Work : Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.

IS Code: : IS 2720(Part 5):1985
Date of Testing : 04.07.2022 to 06.07.2022
Material Type : Wet Mix Macadam

Sl. No.	Particulars	Test Results	Requirement as per MORTH 5th edition Cl.406.2.1.2
1	Liquid Limit	21.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date: 06.07.2022

Aggregate Impact Value

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Sri. D V Kumar,** Contractor, Bangalore.
Name of the Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
IS Code	IS 2386 (Part 4):1963(RA 2011)
Type of Mix	Wet Mix macadam
Date of Testing	06.07.2022

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	380	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	296	296	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.11	22.51	**22.31**

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%(As per MORTH Specication table 400.12)

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date : 06.07.2022

GRADATION FOR WMM

Client : **Assistant Executive Engineer,** Hegganahalli Sub Division, BBMP, Bangalore.
Agency : **Sri. Girisha Y A (Ananya Associates),** Contractor, Bangalore.
Name of Work : Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)
Date of Testing : 06.07.2022
Material Type : Wet Mix Macadam

Oven Dry.Wt, grams 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	195	195	2.0	98.1	95-100
22.4	2456	2651	26.5	73.5	60-80
11.2	2158	4809	48.1	51.9	40-60
4.75	1830	6639	66.4	33.6	25-40
2.36	1168	7807	78.1	21.9	15-30
0.600	525	8332	83.3	16.7	8-22
0.075	1358	9690	96.9	3.1	0-5

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date : 06.07.2022

GRADATION FOR WMM

Client : **Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.

Agency : **Sri. D V Kumar,** Contractor, Bangalore.

Name of Work : Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.

IS Code: : IS 2386 (Part 1):1963(RA 2011)

Date of Testing : 06.07.2022

Material Type : Wet Mix Macadam

Oven Dry.Wt, grams 10000

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Requirement as per MORTH 5th edition table no 400.13
53	0	0	0	100	100
45	172	172	1.7	98.3	95-100
22.4	2435	2607	26.1	73.9	60-80
11.2	2162	4769	47.7	52.3	40-60
4.75	1839	6608	66.1	33.9	25-40
2.36	1152	7760	77.6	22.4	15-30
0.600	549	8309	83.1	16.9	8-22
0.075	1362	9671	96.7	3.3	0-5

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date : 06.07.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Sri. D V Kumar,** Contractor, Bangalore
Name of Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
BIS code:	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	06.07.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 400.12
1	Flakiness Index %	10.90	11.20	Combined Flakiness & Elongation index Max 35%
2	Elongation Index %	12.60	12.80	
	Combined Flakiness & Elongation index	23.50	24.00	

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JobNo: CACE/BBMP/DV/W.No.15/2022-23 Date : 12.07.2022

TEST RESULTS OF AGGREGATE SHAPE TEST
(Flakiness & Elongation)

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore..**

Agency : **Sri. D V Kumar, Contractor, Bangalore.**

Name of work : Desilting and Resetting of drain and re-asphalting to kempe gowda nagar and Maheshwari Nagara roads T.Dasarahalli Ward No.15 T. Dasarahalli Sub Division

BIS Code : IS 2386 Part (1):1963

Date of Test : 12.07.2022

Type of Mix : Dense Graded Bituminous Macadam

Sl.No.	Flakiness Index Value(%)	Elongation Index Value(%)	Total(Combined Flakiness and Elongation)(%)	Requirements
1	12.20	13.60	25.80	Maximum allowable Combined Flakiness and Elongation Indices for Dense Graded Bituminous Macadam is 35% as per Table 500.8 MORTH Specification.
2	12.60	13.90	26.50	

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Date: 12.07.2022

Aggregate Gradation Test

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri. D V Kumar, Contractor, Bangalore.**
Name of the Work	Desilting and Resetting of drain and re-asphalting to kempe gowda nagar and Maheshwari Nagara roads T.Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963(RA 2011)
Sample I / D	Hot mix Plant, Bangalore.
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	12.07.2022

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.50	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.50	715	7.2	7.15	92.85	90 - 100	
19.00	1265	12.7	19.80	80.20	71 - 95	
13.20	1385	13.9	33.65	66.35	56 - 80	
4.75	2514	25.1	58.79	41.21	38 - 54	
2.36	1097	11.0	69.76	30.24	28 - 42	
0.300	1319	13.2	82.95	17.05	7 - 21	
0.075	1156	11.6	94.51	5.49	2 - 8	

Total Weight of Sample: **10000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.10	Remarks
37.5	0	0.0	0	100	100	Gradation satisfies Grade-II MORTH specification
26.5	685	6.9	6.85	93.15	90 - 100	
19	1415	14.2	21.00	79.00	71 - 95	
13.2	1136	11.4	32.36	67.64	56 - 80	
4.75	2415	24.2	56.51	43.49	38 - 54	
2.360	1159	11.6	68.10	31.90	28 - 42	
0.300	1312	13.1	81.22	18.78	7 - 21	
0.075	1174	11.7	92.96	7.04	2 - 8	

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Authorised Signatory

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JobNo: CACE/BBMP/DV/W.No.15/2022-23

Date : 12.07.2022

TEST RESULTS OF AGGREGATE IMPACT VALUE

Client : **Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**

Agency : **Sri. D V Kumar, Contractor, Bangalore.**

Name of work : Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.

Source / Location : Hot Mix Plant, Bangalore

BIS Code : IS 2386 Part (4):1963

Type of Mix : Dense Graded Bituminous Macadam

Date of test : 12.07.2022

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W1 g	383	385	
2	Weight of agregate passing 2.36 mm sieve after the test = W2 g	87	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W3 g	296	296	
5	Aggregate Impact value = percent fines 100* (W2/W1) percent	22.72	23.12	**22.92**

Comments:

→ Maximum allowable Aggregate Impact value for Dense Graded Bituminous Macadam is 27% (Table 500-8 of MORTH specification)

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ಡಿ. ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಪೂಜಿನಗರ ಸಂ.೦೦.೬
ಬೆಂಗಳೂರು-೫೬೦೦೭೨

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Job No: CACE/BBMP/DV/W.No.15/2022-23

Date: **12.07.2022**

TEST REPORT ON PAVING BITUMEN

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Sri. D V Kumar,** Contractor, Bangalore.
Name of work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
BIS Code	IS 73:2013,IS 1203:1978, IS 1208:1978, IS 1205:1978, IS1448(P-69):1969
Date of Testing	**12.07.2022**
Type of Mix	**Dense Graded Bituminous Macadam , VG 30**
Source of Location	**Hot Mix Plant**

The results of the tests conducted on the bitumen sample using for Dense Graded Bituminous Macadam

Sl.No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 0C, 100gms, 5sec, 1/10 mm	52	Min 45
2	Softening point, 0C	50	Min 47
3	Ductility at 250C, cm	>100	Min40
4	Flash Point, 0C	282	Min 220

Note:

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ಬಾಗಲಗುಂಟೆ. ಜಿ.ಕೆ.ಎಂ.ಪಿ
ಬೆಂಗಳೂರು-560073

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date: 13.07.2022

Specific Gravity And Water Absorption Test

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri. D V Kumar, Contractor, Bangalore**
Name of the Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Dense Graded Bituminous Macadam
Date of Testing	11.07.2022 to 13.07.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2022	2023	
2	Weight of basket suspended in water	W_2 g	756	756	756	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1264	1266	1267	
4	Weight of saturated surface dry aggregate in air	W_3 g	2017	2016	2015	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	753	750	748	
6	Weight of oven dried aggregate	W_4 g	2007	2007	2005	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.665	2.676	2.680	2.674
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.701	2.709	2.717	2.709
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.50%	0.45%	0.50%	0.48%

Comments:

→ Maximum allowable Aggregate Water absorption value for Dense Graded Bituminous Macadam is 2.0%(As per MORTH table 500.8)

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Job No.: CACE/BBMP/DV/W.No.15/2022-23

Date: 14.07.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Sri. D V Kumar,** Contractor, Bangalore
Name of the Work	:	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
Type of Mix	:	Dense Graded Bituminous Macadam
Date of Testing	:	14.07.2022

The results of the tests conducted on the Dense Graded Bituminous Macadam mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.25	10.12	9 Kn (min)
2	Marshal flow, mm	3.68	4.51	2 – 4
3	Percent air voids in Mineral Aggregate	13.79	14.35	13 – 15
4	Voids in Compacted Mix	3.84	4.26	3 – 6
5	Percent Voids filled with Bitumen	68.91	69.57	65 - 75
6	Density, g/cc	2.25	2.27	--

Note:

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date: 14.07.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF DENSE GRADED BITUMINOUS MACADAM MIX
AASHTO T 164 & AASHTO T 30

Client	**Assistant Executive Engineer, Dasarahalli Sub Division, BBMP, Bangalore.**
Agency	**Sri. D V Kumar, Contractor, Bangalore.**
Name of the Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
Date of Testing	14.07.2022

BITUMEN CONTENT DETERMINATION

Description	Test 1	Test 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	477.5	477
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	22.50	23.00
7. Bitumen content in %	4.50	4.60
8. Average	**4.55**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.10
37.5	0	0	0	100	100
26.5	34.4	34.4	7.2	92.8	90 - 100
19	73.9	108.3	22.7	77.3	71 - 95
13.2	66	174.3	36.5	63.5	56 - 80
4.75	84	258.3	54.1	45.9	38 - 54
2.360	76	334.3	70.0	30.0	28 - 42
0.300	96.8	431.1	90.3	9.7	7 - 21
0.075	21.6	452.7	94.8	5.2	2 - 8

SIEVE SIZE	Test 2				
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.10
37.5	0	0	0	100	100
26.5	36.5	36.5	7.7	92.3	90 - 100
19	73.4	109.9	23.0	77.0	71 - 95
13.2	66.8	176.7	37.0	63.0	56 - 80
4.75	84.50	261.2	54.8	45.2	38 - 54
2.360	78.6	339.8	71.2	28.8	28 - 42
0.300	98.5	438.3	91.9	8.1	7 - 21
0.075	23.4	461.7	96.8	3.2	2 - 8

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Date: 13.07.2022

Aggregate Impact Value

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Sri. D V Kumar,** Contractor, Bangalore.
Name of the Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 4):1963
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	13.07.2022

Sl No.	Details	Test No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	85.5	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297	297.5	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.05	22.32	**22.19**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%(MORTH table no.500.16)

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Date : 13.07.2022

Aggregate Gradation Test

IS : 2386 Part I

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	**Sri. D V Kumar,** Contractor, Bangalore.
Name of the Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 1):1963
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	13.07.2022

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	415	8.30	8.30	91.70	90 - 100	
9.5	482	9.64	17.94	82.06	70 - 88	
4.75	635	12.70	30.64	69.36	53 - 71	
2.36	682	13.64	44.28	55.72	42 - 58	
1.18	520	10.40	54.68	45.32	34 - 48	
0.600	546	10.92	65.60	34.40	26 - 38	
0.300	489	9.78	75.38	24.62	18 - 28	
0.150	366	7.32	82.70	17.30	12 - 20	
0.075	482	9.64	92.34	7.66	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Requirement as per MORTH table 500.17	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	420	8.40	8.40	91.60	90 - 100	
9.5	549	10.98	19.38	80.62	70 - 88	
4.75	682	13.64	33.02	66.98	53 - 71	
2.36	533	10.66	43.68	56.32	42 - 58	
1.18	559	11.18	54.86	45.14	34 - 48	
0.600	546	10.92	65.78	34.22	26 - 38	
0.300	682	13.64	79.42	20.58	18 - 28	
0.150	198	3.96	83.38	16.62	12 - 20	
0.075	482	9.64	93.02	6.98	4 - 10	

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TEST REPORT

Date: 13.07.2022

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore..
Agency	:	**Sri. D V Kumar,** Contractor, Bangalore.
Name of the work	:	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
IS Code	:	IS 73:2013, IS 1203:1978(RA 2008), IS 1205:1978(RA 2009), IS 1208:1978(RA 2009), IS 1209:1978(RA 2009)
Source of location	:	Hot mix Plant, Bangalore, VG 30
Date of testing	:	13.07.2022

The results of the tests conducted on the bitumen sample using for Bituminous Concrete

Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	48	Min 45
2	Softening point, ^{0}C	54	Min. 47
3	Ductility at 27^{0}C, cm	> 100	Min. 40
4	Flash Point, ^{0}C	272	Min. 220

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Job No.: CACE/BBMP/DV/W.No.15/2022-23

Date : 13.07.2022

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore..
Agency	**Sri. D V Kumar,** Contractor, Bangalore.
Name of Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Concrete
Date of Testing	13.07.2022

Sl no	Test	1	2	Requirements as per MORTH 5th edition table no 500.16
1	Flakiness Index	11.6	12.2	Combined Flakiness & Elongation index Max 35%
2	Elongation Index	13.2	13.4	
	Combined Flakiness & Elongation index	24.80	25.60	

Note:

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Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date : 14.07.2022

Specific Gravity And Water Absorption Test

Client	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore..
Agency	**Sri. D V Kumar,** Contractor, Bangalore.
Name of the Work	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
BIS Code	IS 2386(Part 3):1963
Type of Mix	Bituminous Concrete
Date of Testing	12.07.2022 to 14.07.2022

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2020	2022	2024	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1265	1267	1269	
4	Weight of saturated surface dry aggregate in air	W_3 g	2016	2018	2020	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	751	751	751	
6	Weight of oven dried aggregate	W_4 g	2010	2011	2012	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.676	2.678	2.679	2.678
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.698	2.703	2.708	2.703
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.30%	0.35%	0.40%	0.35%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%(MORTH table 500.16)

Note:

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Job No.: CACE/BBMP/DV/W.No.15/2022-23

Date: 15.07.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
Agency	:	**Sri. D V Kumar,** Contractor, Bangalore.
Name of the Work	:	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	15.07.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.44	10.82	9 Kn (min)
2	Marshal flow, mm	2.69	7.51	2 – 4
3	Percent air voids in Mineral Aggregate	13.45	14.52	13 – 15
4	Voids in Compacted Mix	3.84	4.15	3 – 6
5	Percent Voids filled with Bitumen	69.29	70.12	65 - 75
6	Density, g/cc	2.25	2.26	--

Note:

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Job No.: CACE/BBMP/DV/W.No.15/2022-23

Date: 16.07.2022

TEST REPORT ON STABILITY OF MIX

Client	:	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore..
Agency	:	**Sri. D V Kumar,** Contractor, Bangalore.
Name of the Work	:	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	16.07.2022

The results of the tests conducted on the Bituminous Concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	10.25	9.58	9 Kn (min)
2	Marshal flow, mm	3.67	2.45	2 – 4
3	Percent air voids in Mineral Aggregate	13.46	14.52	13 – 15
4	Voids in Compacted Mix	3.78	4.61	3 – 6
5	Percent Voids filled with Bitumen	70.12	71.15	65 - 75
6	Density, g/cc	2.25	2.26	--

Note:

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⇒ The results indicated above are based on the tests carried out on the samples collected at the site.

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ಟಿ ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ. ಪಿ.ಒ
ಬೆಂಗಳೂರು-560073

For CIVIL AIM CONSULTANTS & ENGINEERS

Authorised Signatory

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Ramaiah Layout, Nagasandra, Bangalore - 560 073.
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(Building Geo-Tech & Highway Materials Testing Laboratory)

An ISO 9001-2015 Certified Company
NABL Accredited As Per ISO/IEC 17025:2017 Laboratory

Job No.: CACE/BBMP/DV/W.No.15/2022-23 Date : 15.07.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Sri. D V Kumar,** Contractor, Bangalore.
NAME OF THE WORK	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	15.07.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469.5	469.5
3. Weight of Asphalt and Mineral matter Extracted, g	30.5	30.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	30.5	30.5
7. Bitumen content in %	6.10	6.10
8. Average	6.10	

GRADATION AFTER EXTRACTION

SIEVE SIZE mm	Test 1 Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	Requirement as per MORTH table 500.17
19	0	0	0	100	100
13.2	12.2	12.2	2.6	97.4	90 - 100
9.5	68.9	81.1	17.3	82.7	70 - 88
4.75	92.6	173.7	37.0	63.0	53 - 71
2.36	42.5	216.2	46.0	54.0	42 - 58
1.18	36.8	253	53.9	46.1	34 - 48
0.600	50.9	303.9	64.7	35.3	26 - 38
0.300	46.3	350.2	74.6	25.4	18 - 28
0.150	35.8	386	82.2	17.8	12 - 20
0.075	46.9	432.9	92.2	7.8	4 - 10

SIEVE SIZE	Test 2	Requirement as

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ಬಿ. ದಾಸರಹಳ್ಳಿ ಉಪ ವಿಭಾಗ
ಬಾಗಲಗುಂಟೆ, ಜಿ.ಕೆ.ಎಂ.ಪಿ
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mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	per MORTH table 500.17
19	0	0	0	100	100
13.2	14.5	14.5	3.1	96.9	90 - 100
9.5	62.8	77.3	16.5	83.5	70 - 88
4.75	90.9	168.2	35.8	64.2	53 - 71
2.36	46.5	214.7	45.7	54.3	42 - 58
1.18	43.8	258.5	55.1	44.9	34 - 48
0.600	52.4	310.9	66.2	33.8	26 - 38
0.300	49.3	360.2	76.7	23.3	18 - 28
0.150	35.6	395.8	84.3	15.7	12 - 20
0.075	40.8	436.6	93.0	7.0	4 - 10

Note:

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Job No.: CACE/BBMP/DV/W.No.15/2022-23

Date : 16.07.2022

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

AASHTO T 164 & AASHTO T 30

CLIENT	**Assistant Executive Engineer,** Dasarahalli Sub Division, BBMP, Bangalore.
AGENCY	**Sri. D V Kumar,** Contractor, Bangalore.
NAME OF THE WORK	Desilting and Resetting of drain and re-asphalting to kempegowdanagar and Maheshwari Nagara roads T. Dasarahalli Ward No.15 T. Dasarahalli Sub Division, BBMP, Bangalore.
SAMPLE ID	Hot Mix Plant, Bangalore
DATE OF TESTING	16.07.2022

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	470	469.5
3. Weight of Asphalt and Mineral matter Extracted, g	30	30.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	30	30.5
7. Bitumen content in %	6.00	6.10
8. Average	**6.05**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Test 1				Requirement as per MORTH table 500.17
mm	Weight Retained, gm	Cummulative Weight Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	12.2	12.2	2.6	97.4	90 - 100
9.5	68.9	81.1	17.3	82.7	70 - 88
4.75	92.6	173.7	37.0	63.0	53 - 71
2.36	42.5	216.2	46.0	54.0	42 - 58
1.18	36.8	253	53.8	46.2	34 - 48
0.600	50.9	303.9	64.7	35.3	26 - 38
0.300	46.3	350.2	74.5	25.5	18 - 28
0.150	35.8	386	82.1	17.9	12 - 20
0.075	46.9	432.9	92.1	7.9	4 - 10

SIEVE SIZE	Test 2	Requirement as

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ಬಿ. ದಾಸರಹಳ್ಳಿ ಉಪವಿಭಾಗ
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19	0	0	0	100	100
13.2	14.5	14.5	3.1	96.9	90 - 100
9.5	62.8	77.3	16.5	83.5	70 - 88
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